

FUSED SILICA
HOT PRESS PLATENS
CASTABLE CERAMICS
FIRED SHAPES
AEROSPACE TOOLING

Foundry Service & Supplies, Inc.

11808 Burke Street, Santa Fe Springs, CA 90670
Telephone: (562) 945-6511
Fax: (562) 696-1633

HI-TEMP INSULATIONS
CALCIUM SILICATE BOARDS
MILLBOARD AND BLANKET
PAPERS AND CEMENTS
CUTTING AND FABRICATING

MONALITE

REFRACTORY BOARDS FOR HIGH TEMPERATURE MOLTEN METAL APPLICATIONS

MONALITE Calcium Silicate refractory boards are specifically designed for molten metal applications. Components machined from Monalite are generally used for the movement, distribution, flow control, and casting of non-ferrous metals and their alloys. Monalite is the principle insulating medium in a number of oven and furnace designs. The exceptional strength and durability of these boards ensures that components are highly resistant to breakage during casting and subsequent cleaning operations. They have excellent resistance to metal flow, prolonging the service life of the components, and minimizing costly replacement procedures. Isostatically molded, Monalite boards exhibit exceptional uniformity and dimensional stability. Three different Monalite grades are available, giving the designer flexibility and assurance in knowing that the desired board properties are always matched precisely with the application.

MONALITE M1

Monalite M1 is the standard for most molten aluminum applications. A superb refractory board, Monalite M1 is widely used in the international aluminum industry. The Monalite M1 formulation will not promote corundum formation- a major benefit for aluminum holding tanks. Identical to Pyrotek B3 board. Comparable to BNZ Marinite-A board.

Applications: Floats, dip tubes & spouts, stoppers, nozzles, distribution boxes, flow gates, header boxes & launder linings, baffles, skimmers, hot pipe supports, collars, gaskets, rings, dust-free continuous service tunnel linings, support pads, roller supports, and heating tape supports.

MONALITE M1A

Monalite M1A is a calcium silicate board that has received an additional heat treatment. The resultant product has zero shrinkage after heating. Since most failures from these types of refractory boards are due to cracks developing as the result of thermal shrinkage, the zero shrinkage of the Monalite M1A makes it an ideal candidate for many tight specification applications.

Applications: Hot top transition rings, skim dams, trough dams, continuous casting trough components, launder sections, and the like.

MONALITE G34

Monalite G34 is a carbon fiber reinforced calcium silicate board with high resistance to thermal shock and stress, providing excellent resistance to cracking during thermal cycling in non-ferrous casting operations. It's high strength and exceptional durability allow Monalite G34 to be successfully utilized in applications that demand long service life. Comparable to Pyrotek N17 and BNZ Marinite A^{HP} boards.

Applications: Critical casting applications such as hot top transition plates, continuous casting tips, horizontal billet molds, and thin-walled machined components.

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MONALITE TECHNICAL DATA

THERMAL PERFORMANCE

All MONALITE formulations are non-combustible. They can withstand continuous operating temperatures of up to 850°C (1562°F), and provide prolonged resistance to cracking and disintegration under thermal cycling or the action of liquid metal flow. This eliminates the risk of inclusion and casting contamination. The low thermal capacity and high insulating value of these dense boards insure that low metal melting and holding temperatures are maintained, resulting in better fuel economy, reduced surface metal oxidation, and improved metal quality.

SHRINKAGE

MONALITE is factory heat treated to insure low thermal shrinkage, minimizing subsequent thermal movement, and retaining dimensional stability when in direct contact with molten metal.

STANDARD DIMENSIONS

Lengths: 1000 mm, 1500 mm, & 3000 mm (39 in., 59 in., & 118 in.): ± 3.0 mm (.118 in.)
Width: 1220 mm (48 in.): ± 3.0 mm (.118 in.)
Thickness: 12.7 mm to 101.6 mm (1/2 in. to 4 in.): ± .4 mm (.016 in.)
(Note: Non standard sizes and thickness' can be quoted upon request)

CHEMICAL RESISTANCE

All MONALITE boards are inert materials which will resist chemical attack by alloying elements, lubricants, and boron nitride and graphite coatings. They will not contaminate molten metal through gaseous emission caused by heat or chemical reaction.

NON-WETTING PERFORMANCE

MONALITE boards have a smooth non-porous surface that will prevent metal adhesion, allowing for easy removal of any frozen metal residues after cooling without damage to the components.

MACHINING

All MONALITE grades can be easily machined using standard shop equipment. Normal engineering techniques and tooling will produce high definition, tight tolerance components with excellent surface finishes. Contact Foundry Service & Supplies for recommendations on speeds & feeds and for tooling suggestions. Or, send us your prints and we will use our 50+ years of experience to produce the highest quality components to your specifications.

PROPERTIES

MECHANICAL PROPERTIES	UNITS	MONALITE M1	MONALITE M1A	MONALITE G34
Bulk Density	PCF	53	60	59
Flexural Strength (ASTM C 203)	PSI	1160	1450	1305
Hardness	Shore D	60	60	60
Compressive Strength (ASTM C 165)				
Cold distortion percentage thickness reduction:				
5%	PSI	1450	1740	1305
10%	PSI	2175	2610	1740
THERMAL PROPERTIES				
Maximum Service Temperature	°F	1562	1562	1562
Thermal Conductivity (ISO / DIS 8894-2) at mean temperature:				
212 °F	W/mK	.195	.400	.343
572 °F	W/mK	.200	.400	.332
932 °F	W/mK	.205	.350	.300
1652 °F	W/mK	.240	.300	.306
Thermal Shrinkage (ASTM C 356)				
Thickness: 24 hrs. at 1382 °F	%	.50	0	.70
Length / Width: 24 hrs. at 1382 °F	%	.15	0	.25
Coefficient of Thermal Expansion	m/mK	6.0 x 10 ⁻⁶	6.0 x 10 ⁻⁶	6.0 x 10 ⁻⁶
CHEMICAL ANALYSIS				
SiO ₂	%	55.6	Same	48.5
CaO	%	41.9	as	46.8
Al ₂ O ₃	%	.18	Metallflow-R	.19
Fe ₂ O ₃	%	.40		.39
MgO	%	.30		.20
K ₂ O+Na ₃ O ₄	%	.05		.04
Mn ₃ O ₄	%	.24		.25
Other	%	1.30		3.6